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Important Changes in the Soft Coal Business.

As an indication of the improvement that may be expected this season in facilities for handling soft coal at Ohio ports, it may be noted that contracts for no less than six car dumping machines, in addition to the one already in operation at Ashtabula, have been let recently. A McMyler machine similar to that in operation at Ashtabula is to be erected at Fairport for the dock company represented by J. R. Irwin, while at Cleveland there will be two machines—one of the Brown Hoisting Company's type on the C. & P. dock and another, to be built by the Excelsior Iron Works, on N. Y. P. & O. dock. Ashtabula will also have two machines, as an order for a second one has been placed with the Brown company by the Morris-Ellsworth interests of Cleveland. The other two machines are both to be of the Brown kind and will be on the Huron Dock Company's property at Huron and the Hocking Valley dock at Toledo. The Cuddy Mullen Coal Company of Cleveland recently made arrangements with the Pennsylvania Company for the construction of a dock within the eastern breakwater enclosure just east of the Cleveland harbor entrance, and they are also negotiating for the erection of car-handling machinery.

In fact, arrangements are now being made with a view to handling, toward the close of next season, practically the entire shipments of soft coal from Lake Erie ports with machines, that will in one way or another do away with the bucket and rotary derrick system entirely. This means not only a reduction in the cost of handling the coal but an important saving of time to railways and coal shippers and a shortening in the time of loading vessels that must have an important bearing on freights. The effect is already noticable in reduced prices made for coal delivered at upper lake ports, and it is now certain that the increase in facilities for moving the bituminous product of the Pittsburg and Ohio districts to the northwest will result in greater changes in the business than have ever before occurred from any one cause. When the rotary derricks and other machinery now in use at Ohio ports is sold and removed to receiving ports on the upper lakes the reduction in the cost of lake coal to consumers throughout the northwest will be even more marked.

There is, of course, some question regarding immediate success with the new types of car dumping machines that have not as yet been given a trial in actual service. The McMyler Car Dumping Machine Company, which was first to erect a successful machine at Ashtabula, is putting up only one other plant, that at Fairport. The management of this company makes certain demands relative to its machines that have caused some of the dock companies and coal shippers to decide on trying other machines, notably that of the Brown Hoisting and Conveying Company, which, alike to others, has not been tried, but of which the builders seem to be confident enough to go ahead with the work of construction.

Ohio Soft Coal Agreement.

Producers of bituminous coal in the Pittsburg district, who again tried this spring to form some kind of an association for the prevention of ruinous competition, have not only been unsuccessful in this regard but are still unable to settle upon a scale of wages with the miners. They have, however, sold considerable coal at a range of prices much lower than has prevailed in any previous year. Some coal to be delivered at Milwaukee, for instance, is reported sold as low as $2.05 and $2.10 a ton. Among the Ohio coal operators the situation is somewhat different. They are expecting that the agreement entered into at Columbus some time ago will prove beneficial. In connection with the Ohio agreement, it was proposed to establish a joint agency for selling all the coal, but while it does not yet appear that this is to be carried out, certain advantages are looked for from an understanding that has been reached in other regards. The Ohio operators have established a board of control, which will meet in Columbus every week to discuss matters of mutual interest and to direct the distribution of the coal to be marketed; and twice every month this board will have a conference with the Ohio Coal Traffic Association, which is composed of the coal-carrying railroads, viz., the Baltimore & Ohio, Cleveland, Lorain & Wheeling, Columbus, Shawnee & Hocking, Columbus, Hocking Valley & Toledo, Toledo & Ohio Central, Wheeling & Lake Erie and the Pennsylvania Company operating the Toledo, Walhonding Valley & Ohio Railway. It is said that the distribution of output for the coming year has been agreed upon as follows: Columbus, Hocking Valley & Toledo district, 2,200,000 tons annually; Toledo & Ohio Central, 1,500,000; Wheeling & Lake Erie, 1,000,000; Cleveland, Lorain & Wheeling, 900,000; Baltimore & Ohio, 600,000; Columbus, Shawnee & Hocking, 600,000; Toledo, Walhonding Valley & Ohio, 400,000. This represents a total of 7,300,000 tons, which is less than the output of 1893, but about 1,000,000 tons larger than that of 1894. Prices must, of course, be very low, but it is thought that if the demand exceeds the output as agreed upon chances are good for rational competition.

Ship Building Matters.

Although announcement of a contract being closed for the big side-wheel passenger steamer for the Cleveland and Buffalo Transit Company has been expected daily for some time past, there is as yet no definite understanding as to whether the boat will be built in Cleveland or Detroit. This order is the only one of importance that is at present engaging the attention of lake builders. The financial question involved in the building of the boat is, of course, not one of small proportions for a new corporation like the Cleveland and Buffalo company, but there is as yet plenty of time in which to place the contract and still have the boat completed for next season. Officers of the Detroit Dry Dock Company are quite confident of securing the order but there is a feeling equally confident that the boat will be built in Cleveland.

Two contracts just closed by F. W. Wheeler & Co. of West Bay City will cause a continuance of building operations at the works of that company until well into the season of navigation. Both boats are to be steel lumber carriers, duplicates, of 214 feet keel and 2,000,000 feet capacity. They will have triple expansion engines and will be in all respects lumber carriers of the best kind. One is for H. W. McCormick of Bay City and the other for L. H. McCormick & Co. of Menominee, Mich. Wheeler & Co. take the wooden steamer E. S. Tice and consort in part payment for the boat to be built for H. W. McCormick. Mr. Wheeler is evidently not idle when there is any kind of an opportunity in sight to keep his ship yard going. A letter from New York, a few days ago, reported that he had a representative in the east endeavoring to form a syndicate for the construction of five steamers of the 400-foot kind, on the claim that no matter what the earnings of smaller vessels on the lakes may be at the present time, the big modern freighters may be made to return better earnings than is to be had for a large amount of capital invested in other channels.

Material is being ordered for the six steel canal barges, to be built by the Globe company of Cleveland for the Cleveland Steel Canal Boat Company, and work on the boats, which are to cost about $50,000 in all, will be started shortly. These barges will be mere boxes in appearance, and will embody no features of construction interesting to ship builders, as most matters pertaining to their operation in a general freighting business between Cleveland and New York are as yet experimental. The steam vessel will have a compound engine, the cylinders of which will be 18 and 20 inches diameter and the stroke 16 inches. Steam will be furnished by an 8-foot boiler. The hulls are to be alike—97 feet long, 17 feet 10 inches beam and 10 feet deep. A long hatch running forward and aft will admit of convenient handling of steel rails, of which the Johnson Steel Company of Lorain promises to furnish a large amount for shipment eastward. In addition to a hatch of this kind the boats will each have two 6-foot hatches. The promoters of the enterprise expect to make such arrangements with the Big Four railway as will draw from territory west and southwest of Cleveland freight that now goes to Toledo and is transmitted by lake to Buffalo, and again moved eastward by rail or canal to New York. Mr. Wheeler, superintendent of transportation of the Cleveland chamber of commerce, has resigned his position with that organization to take charge of the canal boat enterprise, in which he has been very much interested since it was first introduced.

The Jenks Ship Building Company of Port Huron launched, a few days ago, a wooden steamer that has been on the stocks at their yard during the winter. She was named Linden. This boat is of 209 feet keel and will carry about 1,500 gross tons. She will be engaged in carrying copper, coal and other freight between Buffalo and the Portage district, Lake Superior. The Jenks company is still engaged on a tug for B. B. Inman of Duluth. Capt. Inman is also having a tug built at Duluth by Napoleon Grignon.

The tonnage of the steel steamer J. J. McWilliams, building at West Bay City for Capt. John Mitchell and others of Cleveland, is 3,400.8 tons gross and 2,808.93 tons net, and her official number is 77,170.

Appointments of Masters and Engineers.

Peterson, J. D., Huron, O.: Steamer—James C. Lockwood, Capt. J. D. Peterson, Engineer Josh B. Wood.

Ashley & Dustin, Detroit, Mich.: Steamers—Frank E. Kirby, Capt. A. J. Fox, Engineer E. Perry; Wyandotte, Capt. J. Desana, Engineer J. Halder.

Corrigan, John, Cleveland, O.: Steamer—Aurora, Capt. Robt. Donaldson, Engineer Chris. Castle. Schooner—Geo. W. Adams, Capt. Andrew McKay; J. I. Case, Capt. F. D. Perew.

Richelieu & Ontario Navigation Company, Montreal, Can.: Steamers—Passport, Capt. T. J. Craig; Corsican, Capt. H. Eshford; Spartan, H. Grange; Algerian, Capt. A. Dunlap; Hamilton, Capt. Baker.

Rhodes, R. R, Cleveland, O.: Steamers—Neshoto, Capt. W. H. Humphrey, Engineer Thos. Malloy; R. R. Rhodes, Capt. P. Dowdell, Engineer R. D. Mayberry; Siberia, Capt. W. W. Morse, Engineer F. Mooney.

Lake Superior Iron Company, Cleveland, O.: Steamers—La Salle, Capt. H. W. Stone, Engineer Warren Tilton; Joliet, Capt. P. L. Millen, Engineer F. B. Smith; Griffin, Capt. O. W. Green, Engineer Geo. W. Mason; Wawatam, Capt Edward Mooney, Engineer Edward Dempsey; Choctaw, Capt. John Ward, Engineer George Lynn; Andaste, Capt. William Ames, Engineer Frank Steadly.

Names of captains of the Union Transit Company were printed in a recent issue of the REVIEW. The engineers, just appointed, are as follows: Steamers—John M. Nicol, Engineer Geo. Tretheway; Avon, Engineer Jas. Comhaine; Portage, Engineer Geo. Haig; John V. Moran, Engineer Jas. Countryman; Wm. H. Stevens, Engineer John E. McSweenie; Eber Ward, Engineer John R. Judge; Jas. Fisk, Jr., Engineer Fred F. Sherwood.

Gilchrist, J. C., Cleveland, O.: Steamers—City of Genoa, Capt. J. L. Weeks, Engineer James Mitchell; City of Naples, Capt. Geo. Bell, Engineer John Fritz; A. P. Wright, Capt. C. T. Gunderson, Engineer J. Birney; John Craig, Capt. W. H. Moody, Engineer Henry Jesson; R. E. Schuck, Capt. Olof Olson, Engineer Theo. Scudder; J. C. Gilchrist, Capt. J. C. Byers, Engineer J. A. Dines; J. B. Lyon, Capt. H. Gunderson, Engineer A. J. Smith; Cumberland, Capt. J. C. Thompson, Engineer H. Mitchell; Columbia, Capt. B. Moshier, Engineer C. N. Allbee; Hiawatha, Capt. Wm. Blattner, Engineer Henry Stone; Oregon, Capt. ————, Engineer E. D. Butler; Waverly, Capt. ————, Engineer Chas. Martin; Schooners—H. D. Alverson, Capt. Fred Goodale; B. F. Bruce, Capt. Chas. Olsen; W. S. Crosthwaite, Capt. J. P. Minsky; M. S. Bacon, Capt. D. C. Sullivan; Thos. P. Sheldon, Capt. R. Jansen; S. H. Foster, Capt. ————; Verona, Capt. Thos. Tucker; S. L. Watson, Capt. ————.

Not an Uncommon Practice.

Not the least frequent of steamship mishaps, especially during the heavy weather, is the disabling of the steering gear. The plan of one vessel utilizing another as a rudder in such a case, followed on at least one occasion that comes to mind just at present, may, therefore, be of interest. A towing hawser was in this instance taken from the bow of the vessel that was towed, passed to the stern of the towing vessel and made fast to a point 100 feet or more forward of the stern. At a point near the latter were fitted two purchases, one on the port and the other on the starboard side, for the purpose of deflecting the hawser either to port or starboard, and, by the angle thus made, changing the direction of the pull on the hawser. This, of course, changed the direction of the vessel. In other words, any deflection either to the right or to the left of the towing line by means of the purchases produced the same effect on the towing vessel as putting the helm over to port or starboard.—Cassier's Magazine.

Marine Publications.

Screw Propellers and Marine Propulsion. By I. McKim Chase. Published by John Wiley & Sons, 53 East Tenth Street, New York.

This work gives evidence of careful preparation, and although the subject is one on which great latitude of opinion is allowed, those interested in designing screw steamers can hardly afford to be without a summary of the latest researches on the subject. A table showing the performance and particulars of the screws on the United States naval vessels, which it contains, is valuable.

Tales of the South Seas. By Thornton Jenkins Hains. Published by William R. Jenkins, 851 Sixth Avenue, New York, N. Y.

Under the above title about twenty tales are printed in a paper covered book that will make fair reading for lake men, and for the uninitiated that may take a trip up the lakes this summer. The sea terms seem to be correct, and there is some fair poetry sandwiched in between the tales.

Practical Advice for Marine Engineers. By Charles W. Roberts. Published by Spon & Chamberlain, 10 Courtlandt Street, New York.

The author has placed together some practical hints regarding the management of marine engines and boilers. It is especially valuable to young engineers, who wish to get hold of ideas for the general management of steamship machinery. It was written by an engineer during spare moments afloat, and is therefore practical.

Helios is the title under which the Heine Safety Boiler Company, St. Louis, Mo., publishes their catalogue. It is attractive and contains some very valuable engineering tables. According to a comparative analysis, lake water at Buffalo contains 5.66 lime and magnesia carbonates, 3.32 sulphates, 0.58 salt and 0.18 organic matter, making a total of 9.74 grains solid matter. There are only a half dozen other places given where the water as shown is so pure.

Around the Lakes.

Duluth brokers report no change in the grain situation. There is no demand for vessels.

Geo. M. Curtis will be chief engineer next season of the side-wheel steamer City of Toledo.

John L. Costhwaite has bought the schooner Alice B. Norris from Capt. Truman More and others of Lorain, O., for $15,000.

Reports of wevil in grain at Chicego are unfounded. They were caused by the J. B. Ketchum, Queen of the West and one or two other boats wetting cargo through extroordinary conditions.

Arrangements have been made whereby the stage of water at the Sault will he reported daily during the coming season at the ore docks at Ashland and probably other shipping ports at the head of Lake Superior.

Frank E. Kirby of the Detroit Dry Dock Company is preparing plans for a new boat for the Graham & Morton Transportation Company of Chicago, but there is little prospect of a contract being let for a long time to come.

Capt. Wesley C. Brown, who was in the steamer Centurion, has been appointed master of the passenger steamer North West. His application for the position has been under consideration for some time past but was not passed upon until sometime this week.

Weather bureau officials are considering the question of signalling weather predictions by means of a flash light on one of Detroit's tall buildings. It is thought that this service would be helpful to masters of vessels bound down, who might at times question the advisability of venturing out into Lake Erie.

The Northern line passenger steamers will not use the Canadian lock at Sault Ste. Marie during the coming season. The lower portions of the sides of the narrow Canadian lock are so constructed that there is danger of twin-screw boats injuring their wheels. It is thought that freight boats using the Canadian canal may secure the advantage of a few inches more water throughout the Sault river than will be permitted in the American lock.

Among improvements planned in Toledo are a car dumping machine for the Hocking Valley coal dock and a new iron grain elevator to replace the C. H. & D. elevator, which was destroyed by fire recently. About 600,000 tons of coal has been handled on the Hocking Valley dock in a season, and it is expected that an increase of 50 per cent. over these figures will be the record this year. W. A. Todd is the agent of the C. H. V. & T. at Toledo and Edward Heron is the efficient dock manager.

B. B. Inman of Duluth, representing the Lake Carriers' Association, has taken up a proposition from union lumber handlers at the head of Lake Superior, who offer to work during the coming season at 25 cents an hour when freights are $2 or less per thousand, or 40 cents when the rate is above $2. They will make no extra charge for Sunday or night work, and propose to load none but Lake Carriers' boats at these rates. These rates are 5 to 15 cents an hour less than they were last season. It is probable that the proposition will be accepted, at a meeting of the executive committee of the Lake Carriers' Association, which will be held in Cleveland on Tuesday of next week. At this meeting a schedule of wages for all employes aboard lake vessels will also be fixed.

Vessel owners are sure of cheap insurance this year. Underwriters are all holding off on lake business and instructing agents to do nothing but promise customers that they will be cared for at the lowest rates. A 1 wooden hulls will very probably be covered by policies including every feature of insurance that is extended to the best steel hulls at 3 per cent. or less. Policies of the kind now offered to the best wooden hulls would cost full 5 per cent. under last year's tariff.

A COPY OF THE PHOTO-GRAVURE SUPPLEMENT OF DIRECTORS OF THE LAKE CARRIERS' ASSOCIATION, TOGETHER WITH THE LARGE ENGRAVING OF THE STEAMER NORTH WEST, BOTH OF WHICH WERE CONTAINED IN RECENT BIG ISSUES OF THE REVIEW, WILL BE MAILED IN A PASTEBOARD TUBE TO ANY ADDRESS UPON RECEIPT OF 50 CENTS IN STAMPS.

Little Business Before May I.

The heavy ore-carrying contracts that have been closed during the past few days will have a tendency to force an opening of navigation as soon as it is possible to get through the Straits of Mackinac. Engineers will be ordered to work fiitting out in all leading ports next week, and boats will undoubtedly be found bucking ice on Lake Michigan as soon as there is the slightest prospect of their getting through the straits. This will be caused by the efforts of owners who have Lake Superior contracts to move one or two cargoes to or from Lake Michigan in advance of beginning work on their regular contracts. But conditions are all against much business being done before May 1. A telegram from H. A. Barr, dock manager at Escanaba, received just before going to press, expresses the opinion that there will be no ore loaded at that port before May 1, and Capt. L. R Boynton, who is in charge of the big car ferry St. Ignace at the Straits, says it is not probable that boats will make that passage before April 20. At this time a year ago boats had passed the straits, the opening having occured on April 2, and on the 17th of the present month Lake Superior business was begun with the opening of the St. Mary's Falls canal. It would seem, then, that there is to be a difference of nearly a full month in the time of beginning a general movement of vessels. This delay will certainly have some effect on the season's business as regards freights.

All of the Cleveland iron ore firms have been in communication with correspondents at the Sault relative to the probable date of opening and the opinion is quite general that there is little probability of vessels passing to or from Lake Superior before May 1, as the weather has been exceptionally cold, even up to a few days ago, in the vicinity of the Sault, and in all parts of the river ice is 2 to 3 feet thick, with no signs of its breaking up. At this time a year ago small vessels were running in different parts of the St. Mary's river.

Ore Sales—Freight Contracts.

Vessel agents and ore shippers of Cleveland are still actively engaged in closing up freight contracts for the coming season, the great bulk of the business being confined to agreements for the transportation of ore from the head of Lake Superior to Ohio ports and South Chicago, at 75 cents to October 1 and 80 cents for the full season. The amount of ore covered up to this time can not well be estimated, but it is probably close to 1,500,000 tons, aside from a larger amount to be cared for by veesels controlled in the offices of the ore companies. The Illinois Steel Company was among the first purchasers of ore at the new range of prices established by the producers, and although the Carnegie company held off for a few days it is now understood that that big corporation is also in the market at this time, so that the business of the coming week in both sales and freight contracts will add materially to transactions already closed. Most vessel owners who engage in the ore carrying business have accepted the contract rates for a large part of their tonnage, but there are quite a few owners who will take chances on the general results of trip-to-trip rates.

About 250,000 tons of ore to be moved from Marquette was placed on Monday with three or four vessel owners at 75 cents for the full season. As compared with rates from the head of the lakes, these charters were considered favorable to the vessels, and there is quite a large amount of tonnage of a certain class that could be had without difficulty for the full season from Marquette at this rate. The only contract from Escanaba as yet made public is that of the Inter-Ocean Transportation Company with the Pewabic Mining Company for the transportation of 150,000 tons to Ohio ports at a rate said to be a shade below 55 cents.

There is little doubt of the entire Lake Superior output of Bessemer ore, excepting Mesabis, finding purchasers at present prices, and it is also quite certain now that the movement of ore as a whole in 1895 will be the heavist ever known. On this account, there are a few owners who are not accepting contracts. They refer to the readiness with which the question of wages has been settled in several branches of the iron industry, and the fact that the average wild rate last season was 79 cents from the head of the lakes, notwithstanding that some ore was carried at 50 cents. On the other hand, however, the ore business is the only branch lake commerce that is certain to be very active, and there are owners who favor season contracts on general principles. Even if rates go against them, they say, their vessels are more certain of dispatch than they are when the wild rate is the lower rate. Some of these owners also claim that with big steamers there is full 15 cents a ton difference in a vessel being unloaded in a day, as against two days or more when the shipper is not disposed to urge dispatch. These are questions, however, that are a study in the business, and that involve matters of judgment coming up every year when contracts are being let.

Advices of the past few days from Duluth and Superior are to the effect that the amount of soft coal that will be on hand at the opening has been overestimated, but new machinery and general improvement in facilities for handling coal will result in greatly reducing the time of vessels in port, and thus increase the number of ships for cargoes offering, so that quite a low range of coal freights is expected.

Lake Michigan Railway Car Transfers.

Capt. James Davidson of West Bay City, Mich., sends us the following regarding the trade in which the railway car transfers being built by him will be engaged:

"The transfers are being built for the Wisconsin & Michican Railroad Company, and will be used by that company in transporting their cars from different points on Lake Michigan. This railroad is a new road, but is being rapidly extended. About 150 miles of new road will be laid this year. The railway extends from Peshtigo northwest, and will eventually enter Minnesota, with Duluth as a terminus. It is the intention of the company to run the transfers from Peshtigo to South Chicago, although it is very probable that they will also run to Frankfort and Mackinaw. They will also do some business from Peshtigo to Sarnia, Ont., in connection with the Grand Trunk Railroad Company. Only two transfers are being built as yet but others will be built later. The boats now building are 316 feet long and 44 feet beam, and will have four railroad tracks with capacity for transferring an entire train of cars. They will have no power. Provision is being made for large tugs to handle them. They are to be fitted out with large anchors and chains, steam windlasses, steam capstan and steam pumps, and also steam towing machines, and will be towed by a steel cable 200 fathoms long. The towing machines will be of the kind manufactured by the American Ship Windlass Company. The boats will have a pilot house and Texas forward, as well as cabins and apartments for the crew, and they will be supplied with a general outfit similar to that carried by the best modern vessels. The cars will be taken on and off from the stern. While the scheme is somewhat of an experiment, yet everything points to a complete success with it, as it gives the Wisconsin & Michigan Railroad Company valuable and important connections, shortens distance greatly and cuts off delay and attendant expense in switching at Milwaukee and Chicago. We will have charge of organizing the transfer business in the beginning. It is expected to have the boats in active service by July 1."

Vessels Must all have Bells.

Steamboat inspectors are, of course, expected to enforce upon the opening of navigation all parts of the navigation laws for the lakes adopted by the last congress. One feature of the laws having reference to steam whistles and bells will be rigidly enforced. Rule 14, under the heading of "fog signals," is as follows: "A steam vessel shall be provided with an efficient whistle, sounded by steam or by some substitute for steam, placed before the funnel not less than 8 feet from the deck, or in such other place as the local inspectors of steam vessels shall determine, and of such character as to be heard in ordinary weather at a distance of at least two miles, and with an efficient bell, and it is hereby made the duty of the United States local inspectors of steam vessels when inspecting the same to require each steamer to be furnished with such whistle and bell. A sailing vessel shall be provided with an efficient fog horn and with an efficient bell.

Minnesota's New Tax Law.

The Minnesota legislature has also passed a law governing the taxation of vessel property. It provides that the rate on all vessels hailing from ports within the state shall be 3 cents per ton, net registered tonnage, in lieu of all other taxation, state or municipal. While the system of taxing vessels according to their tonnage presents some objectionable features from the standpoint of uniformity; it is thought that this law will be allowed to stand without serious opposition in Minnesota, as the object of it is to encourage ship-owning in cities like Duluth, and the state as a whole has little to lose on account of it. The law makes the rate of taxation certain and places it beyond reach of local influences. It was prepared and its passage secured by Senator Spencer, admiralty lawyer of Duluth.

An advertisement elsewhere in this issue directs attention to the business of the Wheeler Condenser and Engineering Company, 39 Cortlandt street, New York. This firm has purchased patents covering the Volz combined surface condenser and feed water heater, formerly furnished by the Standard Condenser Company, and have made arrangements with the patentee, Mr. Wm. E. Volz, to represent their interests together with their other specialties. Mr. Volz's long experience in the condenser business, with a wide experience in engineering and marine circles, will prove a valuable aid in extending the already extensive business of the Wheeler company.

"ROPER'S LAND AND MARINE ENGINES," BOUND IN MOROCCO WITH FLAP AND POCKET, WILL BE MAILED TO ANY ADDRESS FOR $3.50 SENT TO THE MARINE REVIEW, CLEVELAND, O.

Boilers in the British Commons.

Although James Howden of forced draft fame, and other English engineers who are opposed to tubulous boilers, have challenged the many claims of superiority made for new types of boilers of this kind, open opposition to the action of the British admiralty in adopting the Belleville boiler for some of the largest new vessels of the British navy has been slow in presenting itself. It was to be expected that in England especially, where vast sums of money are invested in big plants for the construction of marine boilers, this action on the part of the government would not be allowed to pass without opposition of the strongest kind from interests that are to be placed at a big disadvantage if the tubulous boiler is soon to be adopted generally for marine use. This opposition was shown to some extent in the House of Commons recently, when Wm. Allen, M. P., made a severe attack on water tube boilers in general, and the engineer-in-chief of the navy in particular, for adopting the boilers in the new vessels of war. Mr. Allen is a builder of marine boilers of the Scotch type, and this may, of course, account in part for his opposition to the new boilers. His conclusions were not supported by facts but the discussion is interesting. He said that the great weakness of the British navy was due to the simple fact that there was deficiency in the boiler power on board the vessels. The admiralty had been trying for years to get one horse-power out of one and a half square feet of heating surface, whereas it required three feet to give such a power. By adopting this method they had rendered every ship in the navy absolutely useless for full steam speed. The boilers were too small and when it was endeavored to get more power out of them than they were capable of giving, the strain was too great for them to bear, and the boilers became practically useless. Locomotive boilers had failed and the admiralty had now been driven, he said, to the adoption of water tube boilers, and had taken them on the slight recommendation of a French engineer, who reported on the Belleville boilers in the vessels of the Messageries Maritimes. But did that engineer report on all the mishaps and repairs which these boilers involved, the number of spare tubes which it was necessary to carry in case of failure, and the cost they involved in the great consumption of coal? The number of explosions which had occurred through the use of these boilers, and the number of fatal accidents in connection with them, were distressing. He wanted a full report made to the house regarding reasons for the adoption of such boilers. They were not economical, and the aim of the admiralty ought to be how to save coal, because the less coal they burned the fewer men would be required, and the greater steaming power the vessel would possess. He could not discover the advantages of these tubulous boilers. They gave less safety, less efficiency, and greater complexity.

The speech of Mr. Allen, of which the foregoing is an extract, is printed quite generally in English exchanges, but not commended, on account of its lack of specific charges or definite information in support of the criticism that is made. Several members supporting the admiralty disagreed generally with the speaker regarding his conclusions. It was shown that Belleville boilers have already been fitted in sixty ships of 350,000 horse power

One member supporting the admiralty said that of the forty-two torpedo boat destroyers completed and building in Great Britain all except six are and will be fitted with water tube boilers. The boilers of nine of these ships were fitted with copper tubes throughout by the contractors, who were responsible for the design, and preferred to use that material. In three of the last named, on the contractors' preliminary trials, failure of the copper tubes occurred in positions most exposed to the fire, and in one case was attended with fatal results. It was consequently decided to avoid further risk by substituting—entirely in some of these vessels, and to a large extent in the others—steel tubes for copper.

Marine Power Plants.

Marine engine building concerns on the lakes have of late found employment in constructing triple expansion engines of the kind used in lake steamers for street railway and municipal electric power plants.

S. F. Hodge & Co. of Detroit, builders of marine machinery, have just turned out of their new works, which are among the finest on the lakes, five sets of engines, of the triple expansion marine type, for the new electric lighting plant to be owned by the city of Detroit. These engines will be of 300 to 350 horse power each. Two of them are now in working order and the entire plant will be accepted shortly by the city. Although rope transmission is employed in connecting engines and dynamos in the Detroit plant, instead of direct connections, the big room containing the machinery presents an appearance that is especially interesting to the marine engineer. Hodge & Co. took the contract for these engines at what was considered a very low price, but the two engines that were started last week are marvels as regards steadiness of operation, and the machinery as a whole is indicative of the ability of the firm to turn out good work at low cost. Mr. Mattsson, designer for Hodge & Co., is undoubtedly among the ablest men connected with machinery establishments on the lakes.

At the works of the Globe company, Cleveland, a fifth triple expansion engine is being erected for the power plant of the Cleveland City Railway Company. This engine is a duplicate of the engine in the steamer Samuel Mitchell and is of about 1,000 horse power. Four other engines of marine type in this plant are of about 500 horse power each, and all were built by the Globe company.

In General.

Never before since ship building began in England and Scotland have prices been so low as they are at present.

The steamer being built by the Cleveland Ship Building Company for Capt. M. M. Drake and others of Buffalo will be named Chili. No name has as yet been selected for the steamer building at the same yard for R. R. Rhodes and others of Cleveland.

Dimensions of the new cup defender being built by the Herreshoffs of Bristol, R. I., are said to have leaked out and are reported as 126 feet over all, 89 feet on water line, 24 feet beam and 19 feet draft. The hull is to be plated with Parson's manganese bronze up to the water line and with steel up to the plankshear. The total area of canvas is given as 12,300 feet and displacement about 140 tons. She is in point of fact a big fin keel boat.

Secretary Herbert has finally let the contract with the John P. Holland Torpedo Boat Company for a submarine torpedo boat. Investigations leading up to the letting of this contract have extended over two years. The boat is to be 80 feet long. She is to be completed within twelve months and is to cost $150,000. The contract calls for a speed of 15 knots when the boat is in light condition and 14 knots when in the awash condition, with a minimum endurance of twelve hours at these speeds, and of 8 knots when completely submurged with a minimum endurance of six hours.

Professor Lucien J. Blake of the chair of physics and electrical engineering at Kansas State University, at Lawrence, has recently been experimenting at Sandy Hook, with a view of establishing communications by wire between the land and a light-ship anchored several miles out in the ocean. The difficulty is that the ship riding at anchor is continually changing its position, and breaks any wire or cable that is fastened to it. Professor Blake conceived the idea—and has carried it out successfully in practice—of attaching to the anchor another chain leading toward the shore for a sufficient distance, so that neither the end of chain nor the water will be disturbed by the tossing of the ship, and there make his connection with the shore cable. This system was completed recently, and the first telephone message that ever passed between a ship anchored out at sea and the land was transmitted from Scotland light-ship to Sandy Hook.

A Toledo correspondent says: "Vessel men will, before many seasons are past, regret that they did not oppose the location decided upon for the new city bridge, which is to be only 1,200 feet above the much dreaded narrow-draw Cleveland bridge. Only two or three years ago the Fedora, Nyanza, Panther and several other boats lost a great deal of valuable time, because of the risk they would incur if they attempted to pass down through the Cleveland bridge in a current that was running at the time. How will it be when another bridge is located at this, the narrowest point in the river, and right on a bend? The location was opposed by Mr. A. W. Colton of the Wabash lake line, the Wabash elevator people, the Mitchell-Rowland Lumber Company. The C H. & D. representatives here also opposed the location selected for the bridge, but there was not a united opposition from the vessel owners. The vessel interests and the tug interests are too closely related for this. Of course the location of a bridge at the point selected means more work for tugs."

Harry Stone, marine engineer of Marine City, Mich., writing of advantages to be derived from the discussion of engineering subjects at the meetings of the associations of working marine engineers, says: "Marine engineers must, in the very near future, become electrical engineers. The advantages of the dynamo over the steam engine for working capstans, windlasses, pumps and steering gears are many. The first cost of long steam pipes, their waste from condensation and their liability to accident, renders them much less desirable than flexible wires for the transmission of motive force throughout the ship. The dynamo is always ready to start without the delay incident to starting a steam engine, and these advantages will bring it into general use on shipboard."

An electric plant with the necessary large lights for wrecking operations will be a feature, this season, of the equipment of the big wrecking steamer Favorite, which is operated under the direction of Capt. M. Swain and Parker & Millen of Detroit. The boat will be stationed at Cheboygan, as in the past, and provision has been made to have all of her pumps, diving apparatus, etc., in the best possible condition.

Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

536,070. **Rudder for Vessels.** Marie V. T. Dubreuil, New York, N. Y. Filed Nov. 23, 1894. Serial No. 529,710.

Claim—The combination of the hull of a vessel provided with double keels one at each side, said keels extending from the stern in approximately parallel lines and converging at the bow, the front lower edges being inclined upwardly, and a rudder pivoted at its rear or inner end to the bottom of the vessel centrally between the keels at the bow, said rudder extending down below the keels.

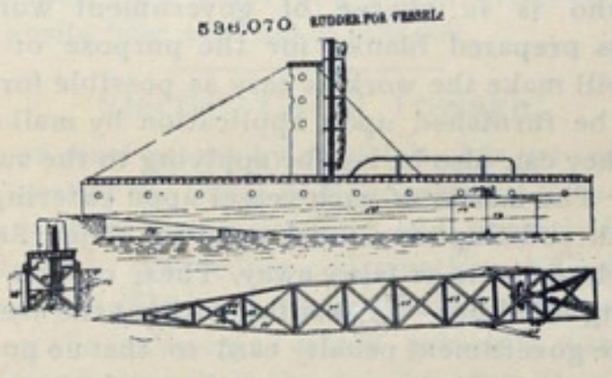
536,071. **Construction of Vessels.** Marie V. T. Dubreuil, New York, N. Y. Filed Nov. 23, 1894. Serial No. 529,711.

Claim—In the construction of vessels, a hull, the same consisting of an outer covering, crossed or X transverse beams connecting the sides of the covering the bottom of the hull following the inverted V-shape of the lower members of the said braces and forming a keel at each side of the vessel, crossed beams arranged at the side portions of the outer covering and extending from bottom to top, and crossed beams connecting the sides of the outer covering at the top of the same.

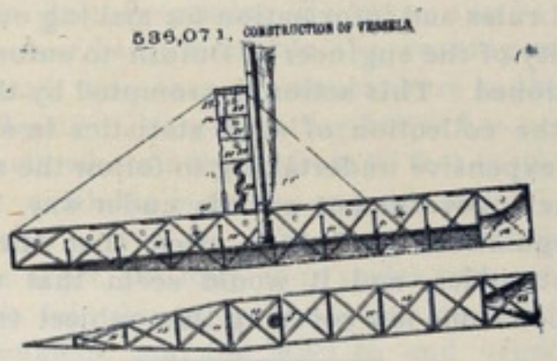
536,135. **Construction of Vessels.** Marie V. T. Dubreuil, New York, assignor of one-half to Michael Meyer, Tuxedo Park, N. Y. Filed Aug. 24, 1894. Serial No. 521,166.

Claim—In the propulsion of vessels, the combination, with a hull, a cannon-like conductor located at the stern and extending from within the hull to the exterior thereof, and a rotating receiver mounted within the hull and provided with a series of chambers adapted to receive explosive material and to register successively with the bore of the cannon-like conductor, of a hammer adapted to cause the explosion of the explosive material in registry with the cannon-bore, a trip mechanism carried by the rotating receiver and adapted to actuate the said hammer, and check devices adapted to act upon the receiver.

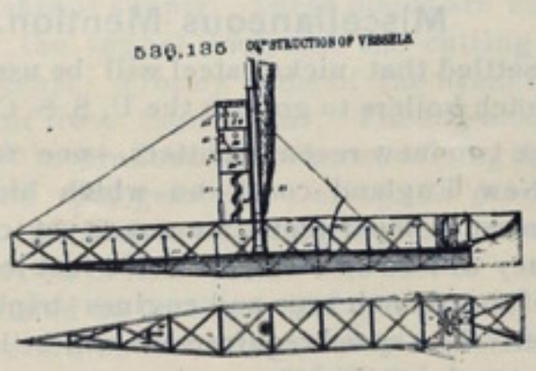
536,070 RUDDER FOR VESSELS



536,071. CONSTRUCTION OF VESSELS



536,135 CONSTRUCTION OF VESSELS



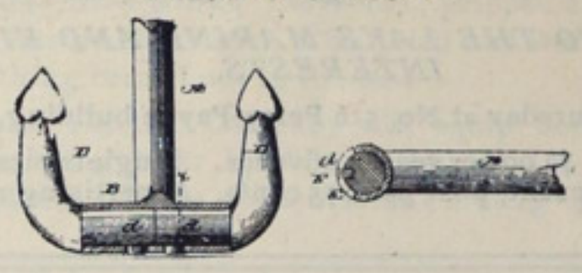
536,177. **Anchor.** William R. Baker, Watertown, N. Y. Filed Oct. 10, 1893. Serial No. 487,772.

Claim—The combination in an anchor of a shank having a hollow cross head, independent flukes provided with journals mounted in opposite ends of the cross head, pins or stops secured to said journals and engaging segmental slots in the cross head to limit the radius of movement of the flukes, substantially as shown and described, whereby each fluke will have an independent movement.

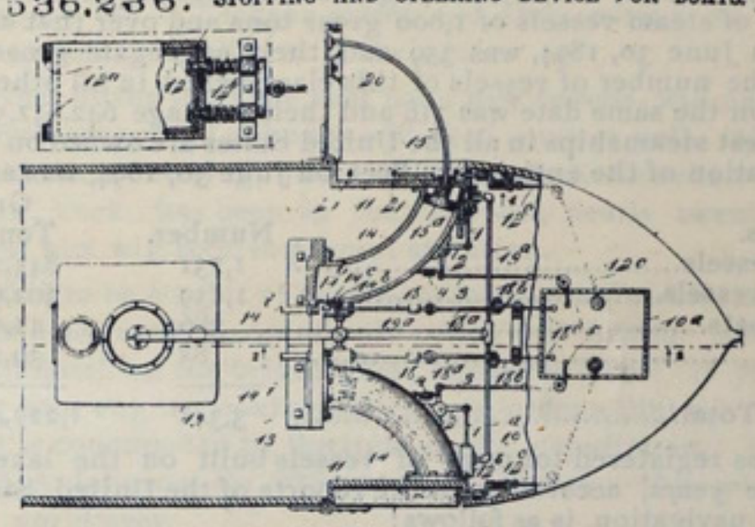
536,236. **Stopping and Steering Device for Boats.** Henry A. Sheldon, Arcadia, R. I. Filed April 9, 1894. Serial No. 506,882.

Claim—The combination, with the hull of a vessel having rectangular chambers oppositely located on its side near the bow, and flanged wings loosely fitting in said chambers and hinged at their rear ends to fold therein or be extended at a right angle therefrom, of independent steam motors having quadruple cylinders, curved piston rods connected to said wings, heads on said piston rods, independent valve mechanism for each cylinder at each end, valve shifting devices extended to the pilot house of the vessel, and a source of steam supply for the motors.

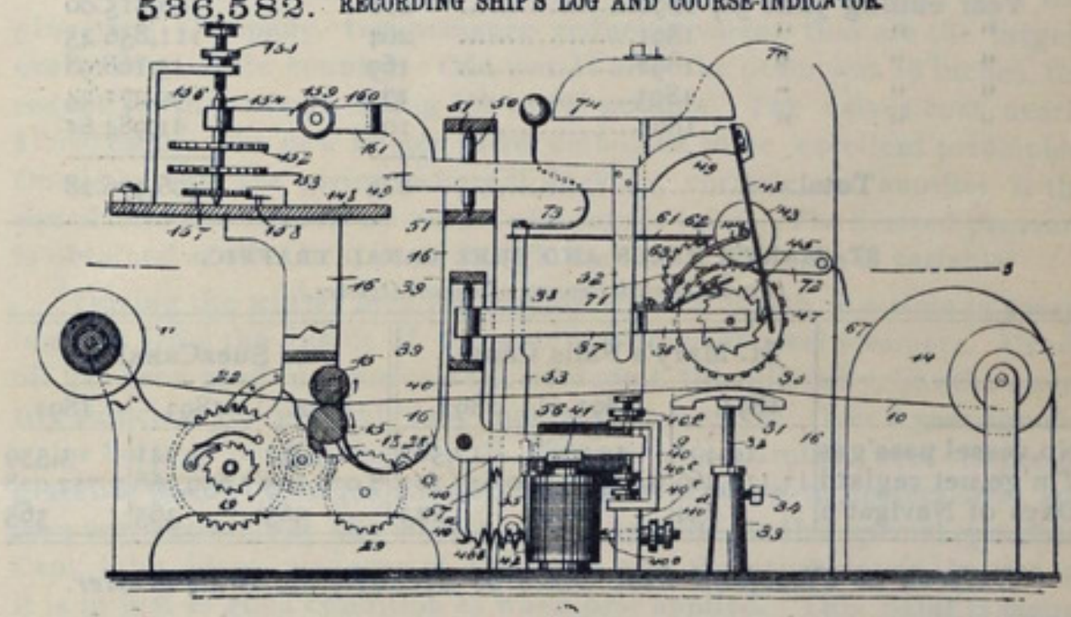
536,177. ANCHOR



536,236. STOPPING AND STEERING DEVICE FOR BOATS.



536,582. RECORDING SHIP'S LOG AND COURSE-INDICATOR.



536,582. **Recording Ship's Log and Course-Indicator.** John P. Rogers, Moncton, Canada, assignor of one-third to George Worrall Daniel, same place. Filed July 11, 1894. Serial No. 517,243.

Claim—In an apparatus of the character described, an electrically actuated registering mechanism, a circuit-closer controlled by said registering mechanism, an electric circuit including the circuit-closer, a magnet in the circuit, an armature lever carrying an armature in inductive proximity to the magnet, a printing table, means for feeding a tape across the same, and a type wheel carried by said armature lever and adapted to print on the tape over said table.

The Mississippi River Commission, which expends great sums of money appropriated annually by the government for Mississippi river improvements, has contracted with Lindon W. Bates of Chicago for an immense dredge, that is expected to be much more efficient than any craft of the kind heretofore used on the river. A feature of the power equipment of the boat will be Heine boilers, of a capacity sufficient to take care of 3,000 horse power in triple expansion engines. This boiler is manufactured by the Heine Safety Boiler Company of St. Louis, and the reasons for its selection for this dredge were its small requirements of floor space per unit of capacity and its economical use of fuel, but chiefly its record of good work on very muddy waters. A special type of mud drum is a feature of the boiler.

The Grummond wrecking tug M. Swain, Capt. John A. Miller, which has been overhauled in Detroit during the winter, will leave for her station at the Sault as soon as a passage can be effected. She has a new spar with an improved steam hoist and an electric plant which includes a search light and several arc lights for use on wrecks.

COPIES OF THE LATEST CHARTS OF GEORGIAN BAY HARBORS MAY BE HAD FROM THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING.

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MARINE REVIEW

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,341 vessels, of 1,227,400.72 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons and over that amount on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1894, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels	1,731	843,239.65
Sailing vessels	1,139	302,985.31
Canal boats	386	41,961.25
Barges	85	39,214.51
Total	3,341	1,227,400.72

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
Year ending June 30, 1890	218	108,515.00
" " " 1891	204	111,856.45
" " " 1892	169	45,168.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
Total	872	406,976.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			SuezCanal.		
	1894.	1893.	1892.	1894.	1893.	1892.
No. vessel pass'ges	14,491	12,008	12,580	3,352	3,341	3,559
T'n'ge, net registd	13,110,366	9,849,754	10,647,203	8,039,105	7,659,068	7,712,028
Days of Navigat'n	234	219	223	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

IN A LETTER printed in the REVIEW last week, Senator McMillan of Michigan shows that he has taken a decided interest in the matter of trying to overcome treaty relations with Great Britain that have prevented lake ship builders from securing contracts for any of the smaller class of naval vessels, for the building of which they have plants fully equipped, and which could readily be moved to the Atlantic seaboard through the St. Lawrence system of canals. Mr. McMillan says he will take this matter up again in the next congress, and it would seem that in the meantime, the shipbuilders of the lakes, who are most interested, should come together and discuss the various questions involved, so as to give the Michigan senator all possible assistance. Another feature of this subject, and one that may cause additional controversy, is presented in Senator McMillan's letter. "It occurs to me" he says, "that even should such vessels be built in the lake ship yards for use on the ocean, the question of getting them to tide water would still remain. This could be accomplished only through the Canadian canals, and you will remember that during the Canadian rebellion the United States compelled the dominion government to land its troops and munitions of war on Canadian territory and transport them around the rapids of the St. Mary's river, thus forbidding the use of American canals for military purposes on the part of the dominion." Notwithstanding this and many other obstacles in the way, Senator McMillan promises, however, that if lake ship builders desire to take up the whole matter systematically, he will do all in his power to help them. The subject is altogether too large and too complicated, he says, to go into it without a well considered plan and the interested backing of senators and representatives from all lake states. This latter influence must be worked up by the ship builders if they are to succeed. Mr. McMillan offers to lead in the effort.

THE EDITOR of the Engineer of New York has set himself up as the censor of the daily press of the country. Columns of his space are given up to useless ridicule of the efforts of the poor daily newspaper worker, who does not pretend to possess a technical knowledge of engineering matters, but who as a rule is not hampered by barnacles or fossil methods when it comes to gathering news. But the critical editor of the Engineer evidently forgets his liver pad occasionally or otherwise slips a cog that results in error more noticeable than that of the much-abused daily paper reporter. Here is a bland admission of mistakes in a single article that he makes in the last issue: "By an oversight, the engraving on the first page of the last issue of the Engineer, the twin-screw engines of the Columbia, was not credited to Engineering, from which paper it was taken. Also a temporary aberration caused us to say that they were put into a paddle steamer when we had already announced them as twin-screw engines."

COL. WILLIAM LUDLOW, a member of the army engineer corps who is very well known and highly respected on the lakes, has again been honored by President Cleveland. He was on Tuesday appointed to the first position on a board selected to report upon the feasibility, permanence and expense of the Nicaragua canal on the route proposed by the construction company. Other members are Commander U. T. Endicott, civil engineer from the navy, and Alfred Noble of Chicago from civil life.

THE impression that the Maguire bill, passed by the last congress, and which relates to regulations governing the employment of seamen in the coastwise trade, will apply to the lakes is very probably erroneous. The law amends certain parts of the statutes that relate entirely to affairs of seamen and shipping commissioners on the seacoast and was certainly not intended for the lakes.

Demand for Statistics of Lake Commerce.

Major Sears, government engineer at Duluth, has, at the request of the business interests of the city, prepared plans for securing reliable statistics covering the commerce of the port. It is well known that the United States statutes provide "that owners, agents, masters and clerks of vessels arriving at or departing from localities where works of river and harbor improvement are carried on shall furnish, on application of the person in local charge of the works, a comprehensive statement of vessel's passengers, freight and tonnage." In accordance with this law, Major Sears, who is in charge of government works at the head of the lakes, has prepared blanks for the purpose of securing such statistics. He will make the work as easy as possible for the vessel men. The blanks will be furnished upon application by mail or in person to Major Sears. They can also be had by applying to the superintendent of the Sault canal. The master of each vessel upon entering or leaving the harbors of Duluth and Superior must send to Major Sears a report of the cargo which he delivers or takes away. These reports will be in a form ready—after being filled out—for mailing without the use of an envelope, and will bear the government penalty card so that no postage will be required. The reports of the cargoes are to be made in tons. Each book will contain full rules and information for making out the reports.

The authority of the engineer at Duluth to enforce these regulations cannot be questioned. This action is prompted by the absence of proper laws to govern the collection of such statistics in all parts of the lakes. It would be an expensive undertaking to follow the same rule in all parts of the lakes where government work is under way, but the plans for enforcing such regulations at Duluth prove that there is an urgent demand for the statistics, and it would seem that the vessel interests should agree upon some law covering this subject throughout the lakes.

Miscellaneous Mention.

It is about settled that nickel steel will be used for the shells and heads of new Scotch boilers to go into the U. S. S. Chicago.

Plans for the two new revenue cutters,—one for the lakes and the other for the New England coast—on which bids will be requested shortly by the treasury department, are not as yet complete, but it is understood that they will be of steel, each 190 feet long and 32 feet beam. Boilers will be of the Scotch type and engines triple expansion of about 2,000 horse power. The speed requirement will be 19 statute miles. The appropriation for each is $175,000.

Commander J. J. Brice, U. S. N., who was during the World's Columbian Exposition in charge of the Lake Michigan light-house district, with headquarters at Chicago, has been retired from the navy on account of ill health. He had been in the navy since 1859 and spent more than seventeen years at sea. A high tribute was paid to him by the retiring board on account of his conduct on the grounding of the U. S. S. Adams last summer in the Behring sea, which was as follows: "The board desires to express its appreciation of the action of Commdr. John J. Brice, U. S. N., in declining to accept the exemption from duty caused by his being on the sick list at the time his ship was in danger, and of his assuming command while in a physical condition which resulted in permanently impairing his health."

Subscribers will avoid danger of mistakes by giving the old as well as the new address when a change is desired.

Complicated Bids on Torpedo Boats.

Bids for torpedo boats, which were opened some time ago by the navy department, and in which lake builders were somewhat interested, are very complicated and are being considered with a great deal of care by the department. The bureaus of constructiou and repair have submitted a joint report to Secretary Herbert on the bids. The report makes no specific recommendation, although a careful reading of the document shows that the bureaus would like to see the contract awarded to the Columbian Iron Works. This firm made a bid of $97,500 for each boat to be built on the department's plans, and was the lowest bidder. In case the secretary did not award the contract to this company, five suggestions were made of what he might do.

First—All three boats might be awarded to the Columbian Iron Works of Baltimoae at their bid of $97,500 each for the three boats.

Second—Two to the same company at their bid of $103,000 each, and the other to the Union Iron Works, San Francisco.

Third—Two to the Columbian Iron Works at $103,000 each, and one to the Herreshoffs at $116,000, the latter boat guaranteed to have a speed of 25 knots, all the others having but 24½, according to the original specifications.

Fourth—One to the Columbian Iron Works at $107,000, one to the Union Iron Works at $135,000, and one to Hugh Ramsay of Perth Amboy, N. J., at $126,000.

Fifth—Two to the Columbian Iron Works at $103,000 each, and to accept the proposal of the Union Works to build a 240-ton boat with a guaranteed speed of 28 knots, for $232,000.

The secretary was compelled to abandon his intention of building the 243-ton boat proposed by the Union Iron Works, on account of the heavy cost. When the time for proposals was extended nearly all the bidders, with the exception of the Columbian Iron Works, submitted new proposals. The Union Iron Works wrote that it would build a single boat on its own plans for $116,500, and would guarantee to give a speed of 26 knots. The Herreshoffs guaranteed a speed of 25½ knots for a steel boat on their own plans at a cost of $113,000, and a speed of 26 knots for a composite boat at a cost of $138,000.

Electric Canal Towage.

The towage of canal barges by electricity has proved most successful on the summit level of the Canal de Bourgogne in France. The portion of the waterway is about four miles long, and is partly in a deep cutting and partly in a tunnel. To reduce construction expenses the canal was made as narrow as possible, and a towpath dispensed with, the haulage being effected on the submerged chain principle, a steam tug hauling on to this chain and dragging the barges after it. The engineer in charge conceived the idea of replacing the steam tug by an electric one, since, ample water power being available, the working expenses could be materially reduced, and, moreover, the atmosphere in the tunnels would also imrove considerably. A generating house has been fixed at each end of the upper reach, where a fall of from 23 feet to 26 feet is available. The amount of water available is on the one side about 7 cubic feet a second, and on the other about 11. The dynamos at the two stations, though about 4 miles apart, are coupled in series with each other. There are thus three mains laid alongside the upper reach, viz., the one connecting the two dynamos, and the positive and negative mains from which the tow boat takes it supply. These mains are suspended on rubber insulators from the tunnel roof, and the cutting from suspender wires spanning the canal. Trolley arms of the usual type are used for picking up the current from these mains. The tug motor is of 19 horse power, and runs at 900 revolutions per minute, driving the hauling pulley by means of a belt and spur gearing. During the passage through the tunnel the current is also used for lighting the boat, as also during night work on the open portion of the reach. The cost of the plant was $27,000. The saving is stated to be about $800 per annum, which does not appear to be a high return on the outlay, but it is stated that the plant is less trouble to work than the steam tugs, and the speed attained is somewhat greater.

Shortly after the opening of the coming season, there will be five points in the rivers between Lakes Erie and Superior where steamers can be run under spouts in high docks and obtain fuel with little more loss of time than is necessary in watering and fueling a locomotive drawing a fast passenger train. O. W. Shipman & Co. and J. & T. Hurley of Detroit are to have plans ready for fueling vessels from shutes in a manner similar to that inaugurated by Stanley B. Smith & Co., of Detroit. The new Shipman dock will be at Amherstburg and the Hurley dock at Detroit. Other docks already in operation are those of Pickands, Mathers & Co., at Detour, and Mullen & Gatfield, just below Detroit on the Canadian side of the river.

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Trade Notes.

For paying or caulking decks Jeffery's patent marine glue should be used. L. W. Ferdinand & Co., No. 257 Federal street, Boston, are the agents.

The Viaduct Brass Works, Cleveland, shipped a very nice order of dead-lights to Boston this week. The finish and workmanship will compare with anything turned out in the east.

The General Electric Company will equip both the Mitchell and Eddy steamers, being built by F. W. Wheeler & Co. of West Bay City, with electric plants. These boats will rank among the largest freighters on the lakes.

Captains will be interested in knowing of a marine laundry in Chicago, conducted by marine men, Ira B. Mansfield and A. E. Finney. They are located at 173 E. Jackson street, and they extend an invitation to marine men to have mail sent in their care.

Now that fitting out time is at hand new vessels will need a full outfit of life preservers and old ones will need some as well. All sailing vessels should have two ring buoys at least. D. Kahnweiler, No 437 Pearl street, New York, has been in the business nearly twenty years, and orders sent him will receive prompt attention.

It is said to be a habit of engineers to call for a certain kind of polish. Those who have used Bertram's oil polish will call for that, because it puts an oil finish on the bright work, and saves labor. If you take pride in having your engine looking ship-shape, order a pint can, 50 cents, and try it. It is commended by the light-house department. The manufacturer is H. A. Johnson, No. 22 State street, Boston. It is sold at the same price the world over.

There was shipped last week from Newark, N. J., by the Foster Engineering Company, two pressure reducing valves that are the largest ever made in this country. One was 14 and the other was 16 inches, the reduction in pressure being 160 to 135 pounds. The valves cost nearly $1,000 each. The new Foster valve embodies some excellent principles. One is having the spring where it does not corrode, and another is the equalization of tension by means of a toggle joint. The desired pressure is obtained at all times, even though the initial pressure is variable.

During the winter men are employed for a month at a time in scraping rust from the inside of the water bottoms of steel steamers. Crude oil has been used in some cases to overcome this difficulty, but the quantity sufficient to prevent rust makes it expensive. Over a year ago the water bottom of the steamer E. C. Pope was painted with Superior graphite paint. The qualities of the paint tending to protect steel and iron are known, but the object was to test it for this special purpose. Capt. John Shaw, manager of the Pope, says the paint stands the test, as it is in just as good condition as when first applied. This paint is manufactured by the Detroit Graphite Manufacturing Company, Detroit, Mich.

As an indication of the wholesale manner in which orders for specialties in different lines of machinery are given out when ship building operations are active on the lakes, it may be noted that a few days ago Capt. James Davidson of West Bay City, Mich., placed an order with the American Ship Windlass Company of Providence, R. I., for three steam towing machines and two steam windlasses, and F. W. Wheeler & Co. of the same place ordered four steam windlasses and two steam capstans. But even these orders do not cover the full requirements of the two West Bay City firms. Capt. Davidson had previously ordered three steam capstan windlasses and two steam capstans, and two additional contracts for new ships just booked by Wheeler & Co. will increase the business of that firm with the Providence concern.

TWO BOOKS OF SAILING DIRECTIONS, ONE COVERING LAKE SUPERIOR AND THE ST. MARY'S RIVER AND THE OTHER COVERING LAKE MICHIGAN AND THE STRAITS OF MACKINAC, ARE NOW OFFERED FOR SALE BY THE HYDROGRAPHIC OFFICE. THESE BOOKS ARE PARTS OF A WORK THAT WILL COVER THE ENTIRE CHAIN OF LAKES. THEY CONTAIN CHARTS OF LEADING CHANNELS AND HARBORS, AND MAY BE HAD FROM THE MARINE REVIEW, 516 PERRY PAYNE BUILDING. CLEVELAND, AT $1 EACH.

U. S. ENGINEER OFFICE, 157 Ottawa St., Grand Rapids, Mich. March 5, 1895. Sealed proposals will be received here until 12 o'clock noon, April 4, 1895, and then publicly opened, for Breakwater construction at Petoskey, Mich., and for Pier extensions at Frankfort Harbor, Mich. Specifications furnished on application to G. J. LYDECKER, Lt. Col., Engrs. april 1

OFFICE OF LIGHT-HOUSE ENGINEER, 9th and 11th Light-House Disticts, Detroit, Mich., March 25, 1895. Sealed proposals will be received at this office until 3 o'clock, P. M., of Monday, the 15th day of April, 1895, for furnishing seven skeleton iron towers for Hay Lake Channel, St Mary's River, Michigan. Plans, specifications, forms of proposals, and other information may be obtained on application to the undersigned. The right is reserved to reject any or all bids and to waive any defect. M. B. ADAMS, Major, Corps of Engineers, U. S. A., Light-House Engineer. April 4

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store and afloat at the principal points of accumulation on the lakes on March 23, 1895:

	Wheat, bushels.		Corn, bushels.	
	In store.	Afloat.	In store.	Afloat.
Chicago	24,095,000	2,360,000	5,057,000	2,329,000
Duluth	11,786,000	85,000	1,000	.....
Milwaukee	701,000	.....	.....	.....
Detroit	1,172,000	444,000	169,000	.....
Toledo	2,151,000	299,000	764,000	.....
Buffalo	2,464,000	295,000	95,000	541,000
Total	42,369,000	3,483,000	6,086,000	2,870,000

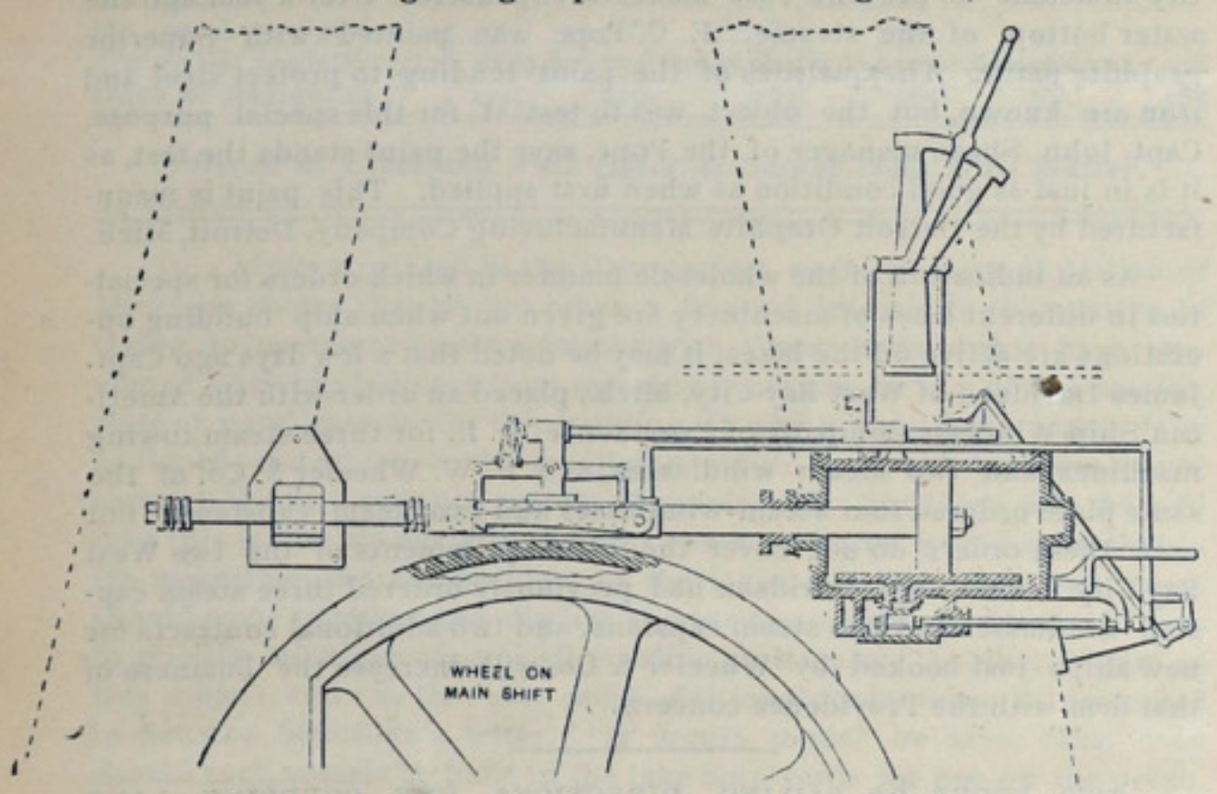
Not Favorable to Canvas of Any Kind.

General Manager Babcock of the Chicago Ship Building Company, who is to build for John Corrigan and others of Cleveland a boat without sail of any kind, is quoted as saying that in the towing business on the lakes sails are worse than useless. It is his belief that a barge without canvas is much less likely to go ashore when it breaks away from its steamer in a storm than if it carries canvas. If the captain realizes, he says, that he can get nowhere except drift he will let his anchors down and ride out the gale, but if the captain has some sail, he will try to get somewhere and generally fetches up where he ought not to. The gain in propelling power with sails in a fair wind, in Mr. Babcock's opinion, is more than counterbalanced by the loss in pulling masts and rigging against a head wind. Besides, the masts, rigging, and sails will weigh some twenty-five tons, and are expensive to keep in repair.

Spars for vessels now building in South Chicago have all been brought from the Pacific coast. It is cheaper to move them to Chicago from the state of Washington than from Michigan.

See's Turning Engine.

The engraving represents an engine for turning the main engines of a steamer when there is no steam on the main boilers. It is usually operated from a donkey boiler but can, of course, be used at any time. The engine was invented and patented in 1882 by Horace See, engineer and naval architect of New York, and was first used by him on the steamship Chalmette. The engraving explains itself to engineers, for it consists



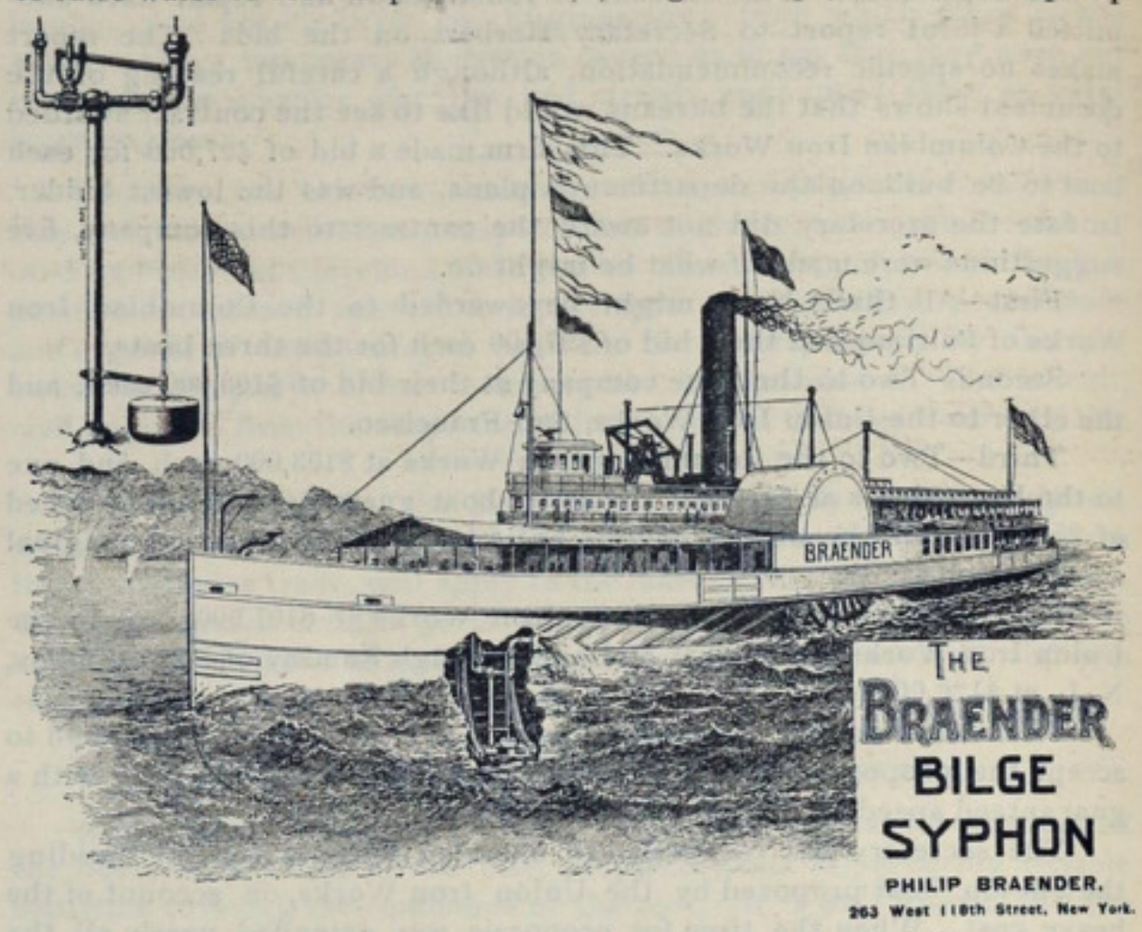
merely of a large balance wheel on the main shaft which has ratchet teeth on the periphery leading in both directions. The steam cylinder attached to the leg of the main frame, as shown, has a cross-head with pawls affixed to it in such a way that they may be readily engaged with or lifted out of contact with the balance wheel, and these pawls as well as the slide valve are operated by the lever shown; there are two of these, one on each side of the quadrant. There is no other gearing, the action being direct, very efficient and rapid.—The Engineer, New York.

Elsewhere in this issue attention is directed to a clause in the new navigation rules for the lakes, providing that all vessels, steam and sail, must be provided with an efficient bell. The Viaduct Brass Works, Washington and Center streets, Cleveland, have what is wanted in this regard at reasonable prices. All inspectors will enforce this rule for the coming season.

The Fall River Line steamers now leave New York for Boston at 5:30 p. m. instead of 5 o'clock. During the summer season from June 17th their double service will be inaugurated, including the steamers Priscilla, Puritan, Plymouth and Pilgrim, four of the finest paddle-wheel steamers in the world. When you are in the east vary the monotony of railroad travel by using this line between New York and Boston.

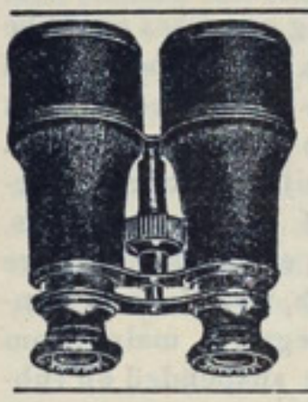
Automatic Jet Bilge Pump.

The Braender jet pump has been arranged so that it can be applied to vessels. It is not only applicable to steam but to sail vessels that have a donkey boiler Only about 40 or 50 pounds steam pressure is required to raise water 30 feet in quantities of 4,000 gallons per hour. This pump



is automatic. It is started by the raising of a float in the bilge and continues to operate until the bilge is dry. Besides being of great protection to cargo, this pump would no doubt tend to save vessels that founder as a result of moderate leaks. The accompanying engraving, and also one in an advertisement elsewhere in this issue giving more detail, explain the pump and its operation. The price is very reasonable, and it is recommended by several prominent sanitary engineers. Send for circular to Phillip Braender, No. 261 W. 118th street, New York, N. Y.

OFFICE OF LIGHT-HOUSE ENGINEER, 9th and 11th Light-House Disticts, Detroit, Mich., March 25, 1895. Sealed proposals will be received at this office until 3 o'clock, P. M., of Monday, the 15th day of April, 1895, for furnishing seven skeleton iron towers for Hay Lake Channel, St. Mary's River, Michigan. Plans, specifications, forms of proposals, and other information may be obtained on application to the undersigned. The right is reserved to reject any or all bids and to waive any defect. M. B. ADAMS, Major, Corps of Engineers, U. S. A., Light-House Engineer. April 4



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An act to regulate navigation on the great lakes:

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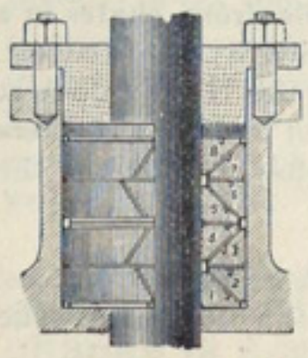

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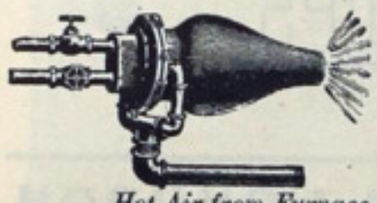

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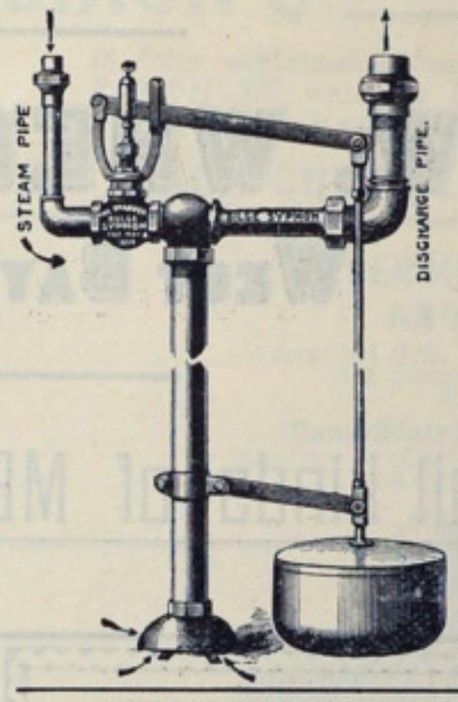

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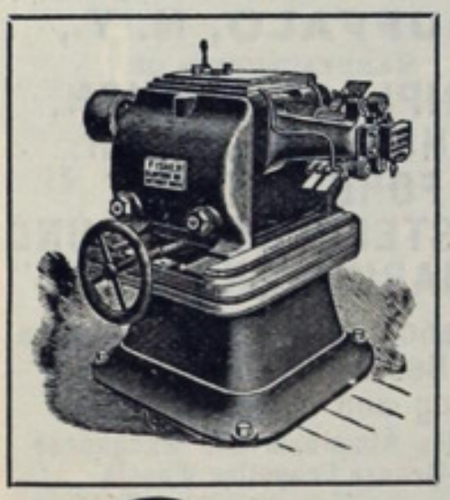

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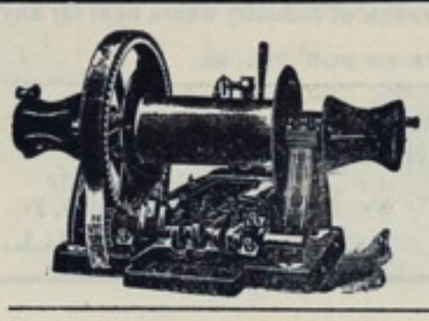

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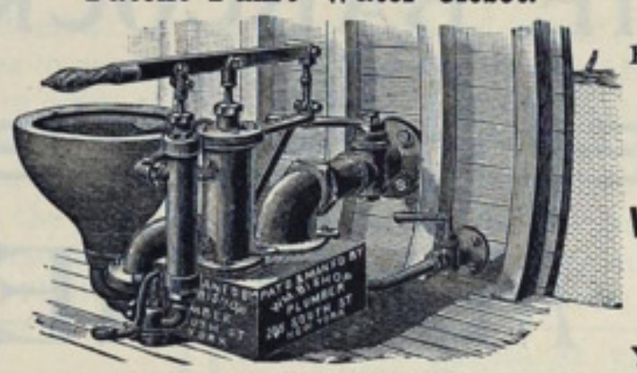

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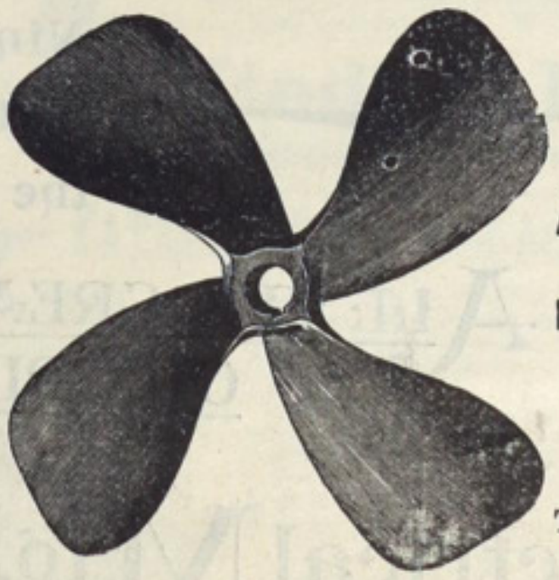

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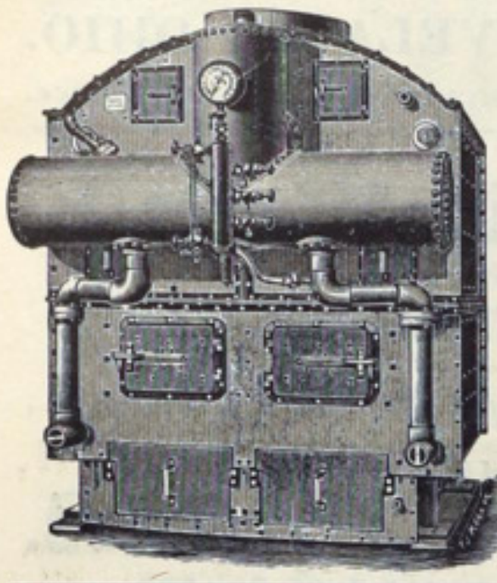

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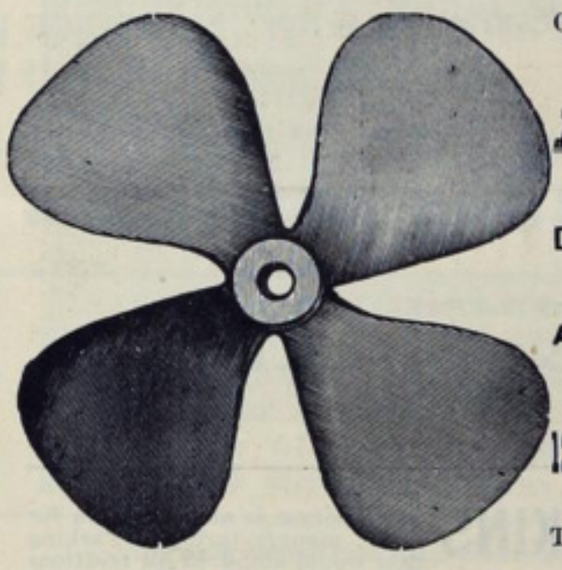

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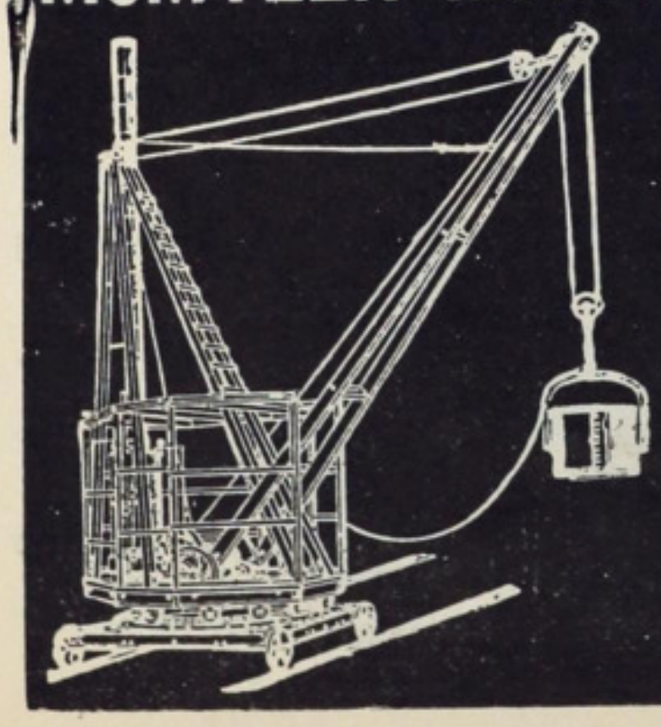

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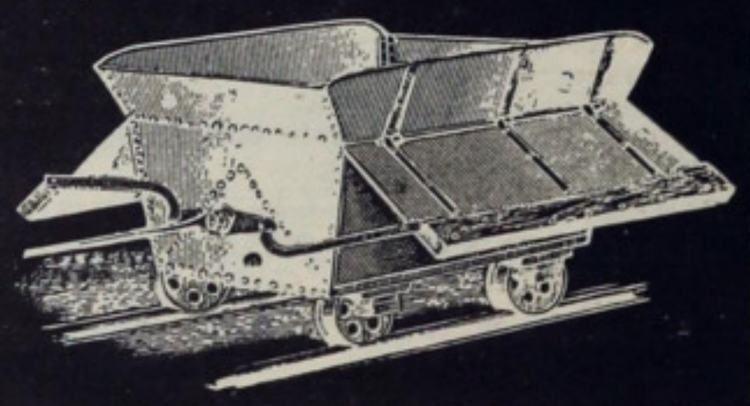

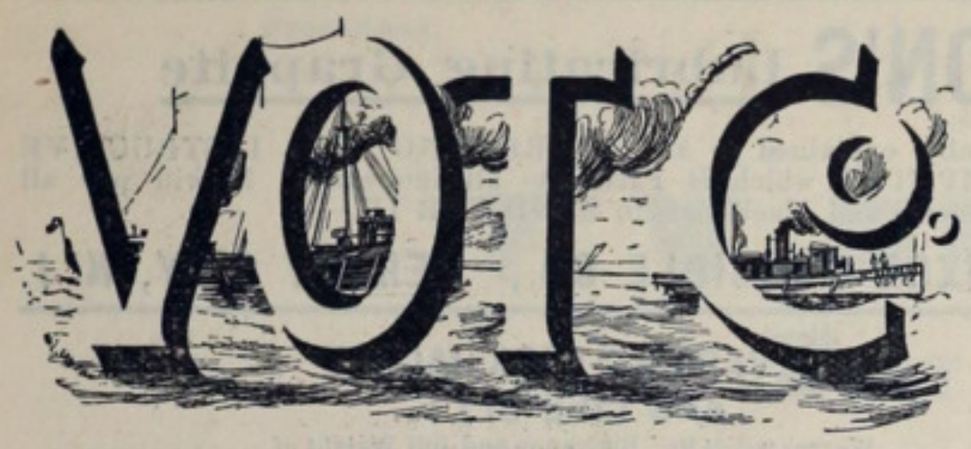

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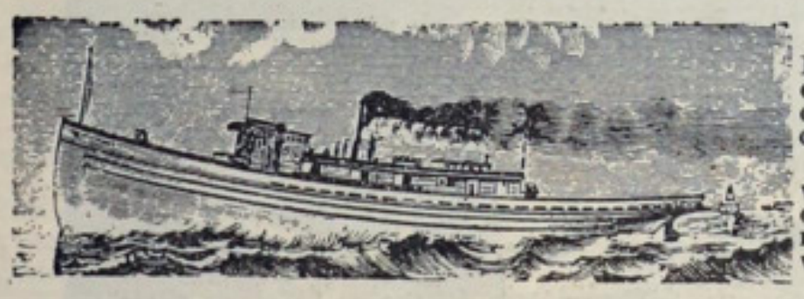

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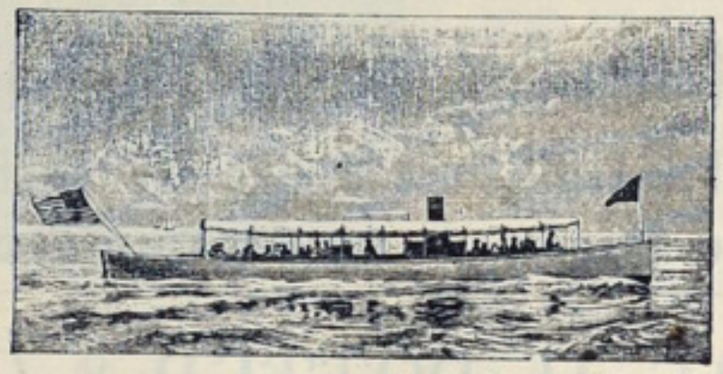

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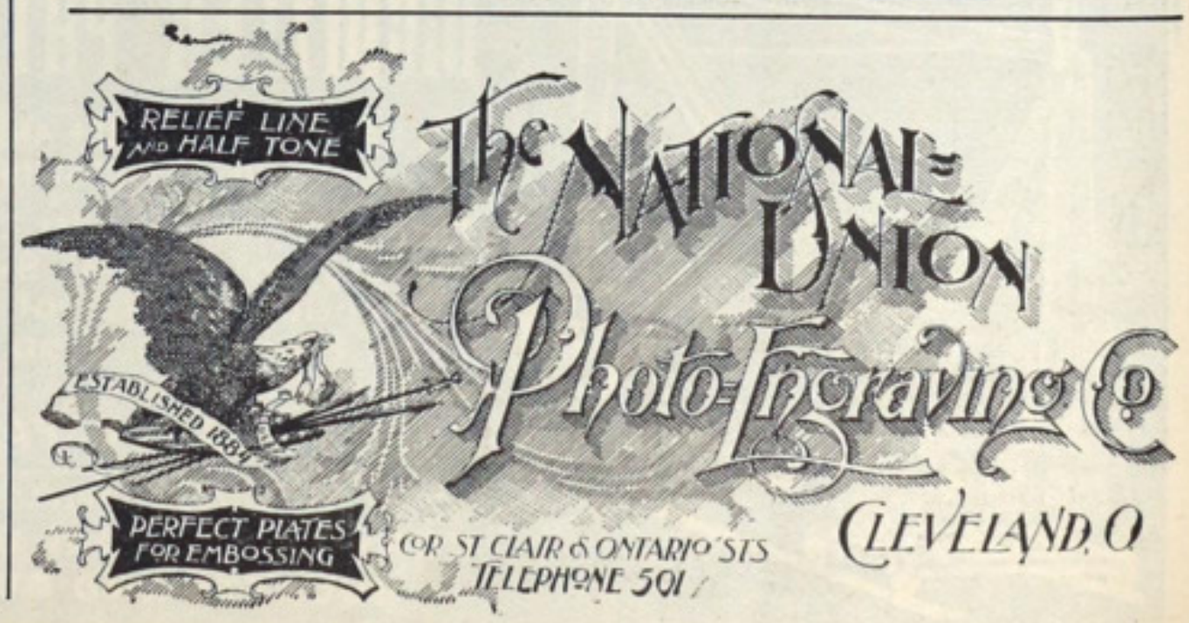

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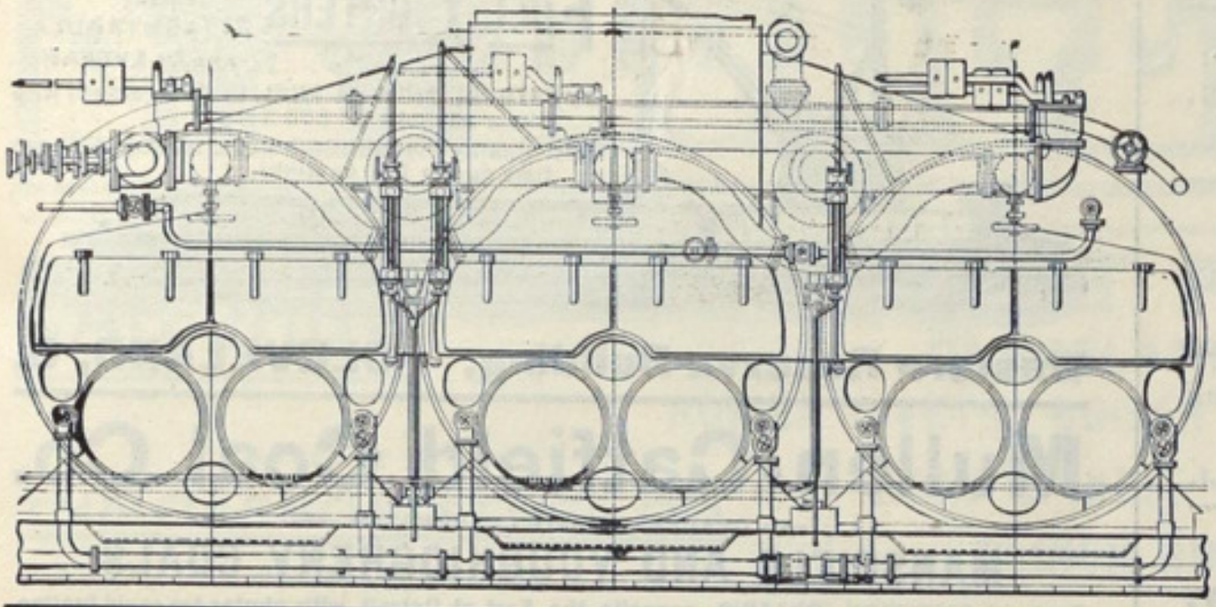

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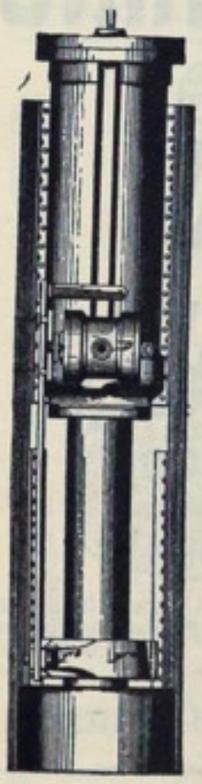

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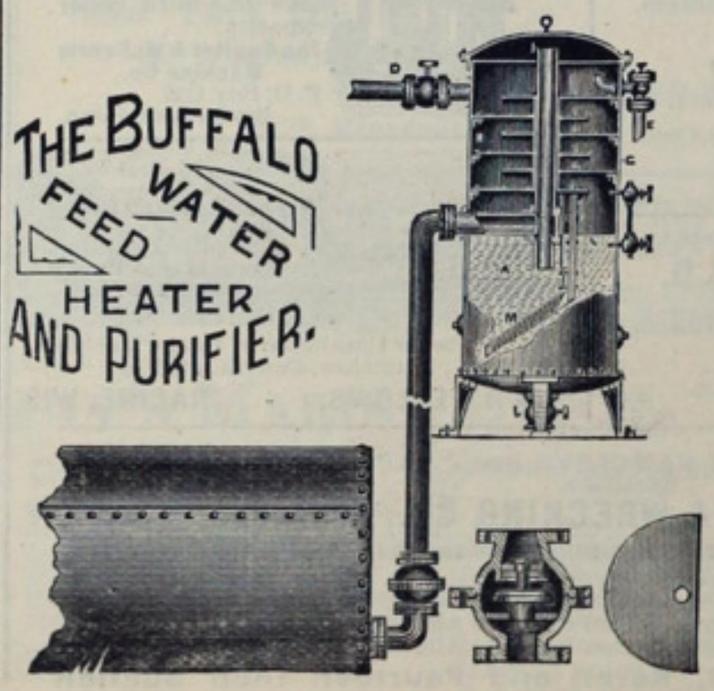

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B.—Boiler.
C.—Feed pipe to boiler.
D.—Steam pipe.
E.—Water supply pipe.
F.—Check valve.
G.—Spray disks.
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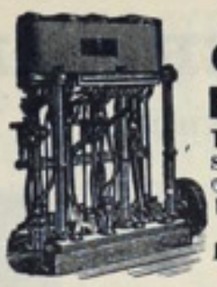

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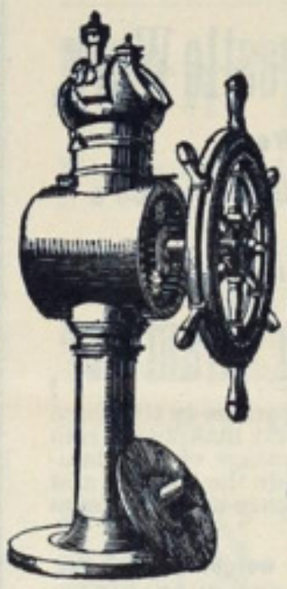

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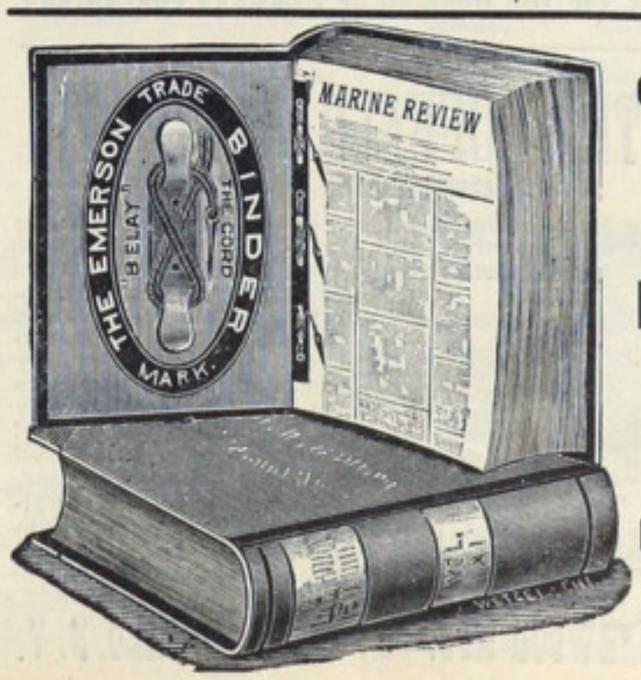

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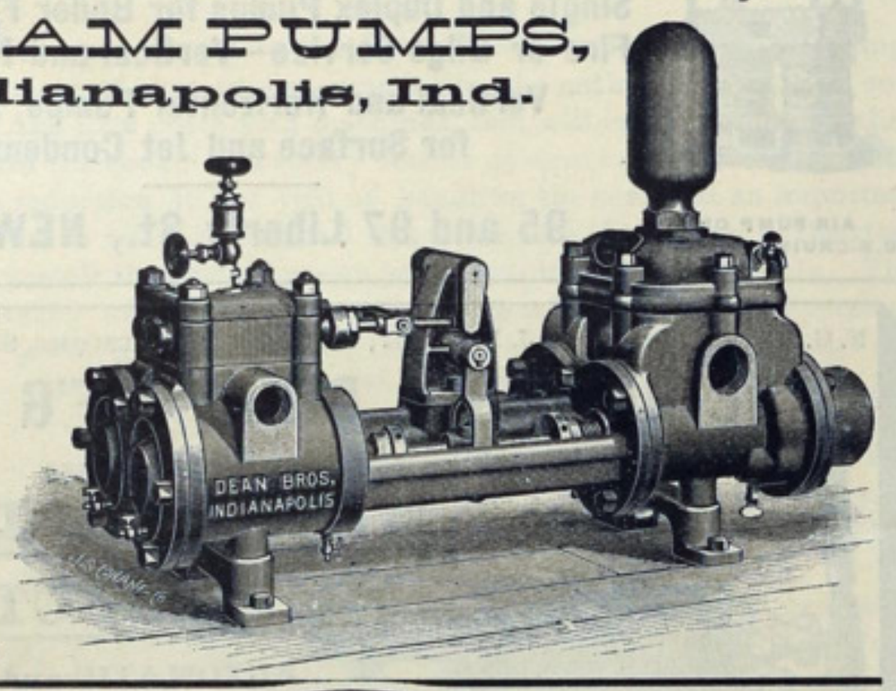

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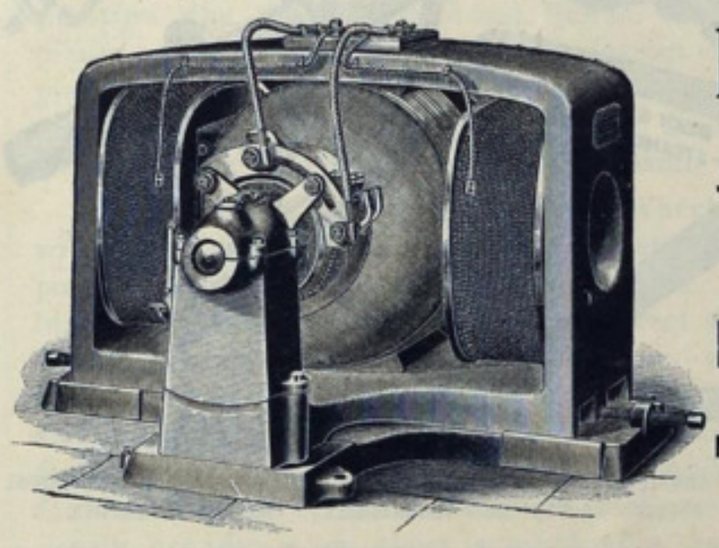

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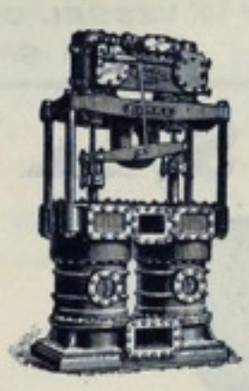

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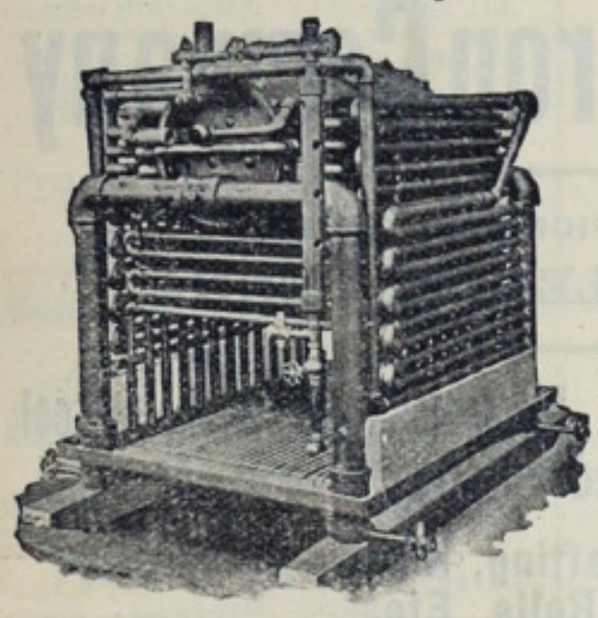

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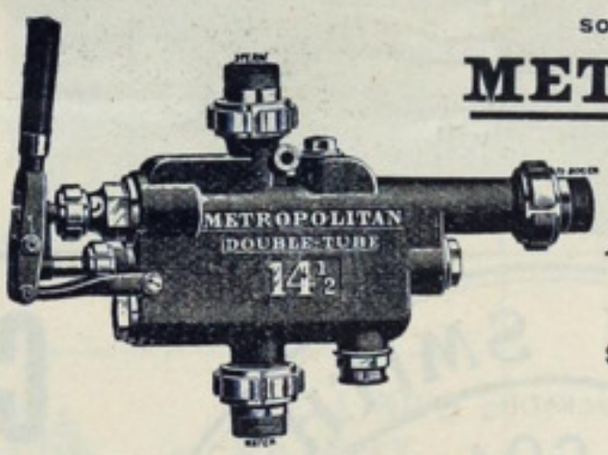

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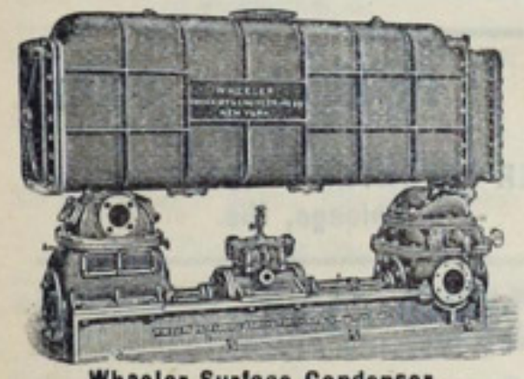

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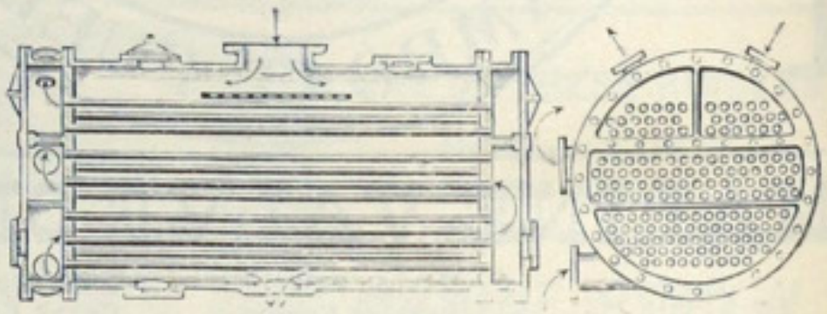

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